

# **Traffic Enforcement by Vermont State Police July 2010 to June 2011**

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## **Traffic Enforcement by Vermont State Police**

### **Executive Summary**

At the request of the leadership of the Vermont State Police, during the summer of 2011, Jack McDevitt and Chad Posick from the Institute on Race and Justice at Northeastern University analyzed traffic stop data provided by the Vermont State Police (VSP). The major purpose of the study was to identify any racial or ethnic disparities in enforcement by VSP troopers. Additionally, the VSP was concerned with identifying any disparities of enforcement by age, gender, or race.

The data show that males, individuals aged 21-40, and whites are the groups most often stopped by the VSP. By far, moving violations are the reason for most stops followed by faulty vehicle equipment. When a search is conducted by the VSP, contraband is found almost two-thirds of the time. This hit rate is far above the national average and the results from most prior research. This suggests that the VSP troopers are doing a good job identifying when to search a vehicle. Across the State most stops result in a warning and just over 40% of the time the stop results in a ticket. A ticket is issued more often for moving violations than other reasons for a stop. Two assignment areas were identified as outliers in the issuance of warnings and citations. Assignment SPD3 issued far more warnings than citations while assignment SPH1 issued far more tickets than warnings. The data do not allow us to speculate about the reasons for this result.

The results indicate that there are few areas in which racial and ethnic disparities exist. Of these, non-whites are searched slightly more than whites despite their lower hit-rate. Non-whites are also ticketed more often than whites. However, the data do not suggest that this is related to any systematic bias by VSP officers.

Overall, the analysis suggests that the VSP are professional in their enforcement practices. The disparities found in the data do not indicate any inherent bias by VSP officers. However, efforts to collect additional data on stops appear to be warranted. Further analysis by VSP supervisors would be useful in understanding why disparities in citations and searches exist between white and non-white drivers.

## INTRODUCTION

During the summer of 2011 the authors of this report were contacted by the Colonel and members of the command staff of the Vermont State Police and asked to assist with their analysis of traffic stop practices by Vermont State Police (VSP) troopers. They hoped to learn if any racial or ethnic disparities existed in the enforcement patterns of VSP troopers. This is an unusual and quite progressive approach to dealing with concerns about possible biased policing practices within an organization. Often, law enforcement organizations ignore or simply deny that any racial or ethnic biased practices are occurring in their organization and this kind of review only follows a lawsuit or some kind of public incident. The command staff of the Vermont State Police should be commended for taking this proactive step toward understanding if any biased practices might be occurring in their organization.

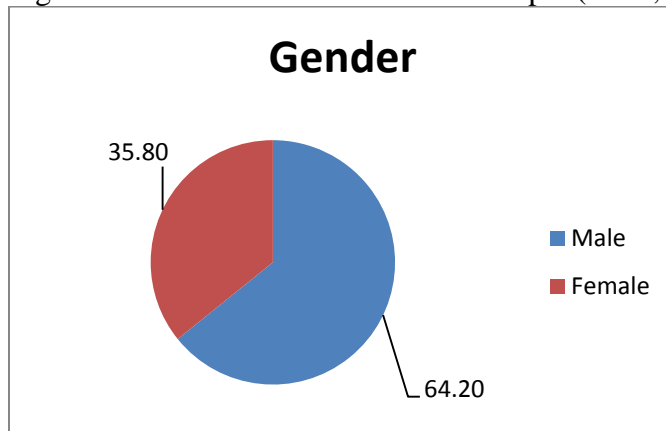
On October 28, 2011 we received data from the VSP for all traffic stops conducted between July 2010 and June 2011. These data included 49,672 traffic stops conducted by 275 troopers. We have analyzed these data and have produced the following report of traffic enforcement practices of the VSP.

### WHO IS STOPPED BY VERMONT STATE POLICE?

#### Gender and Age

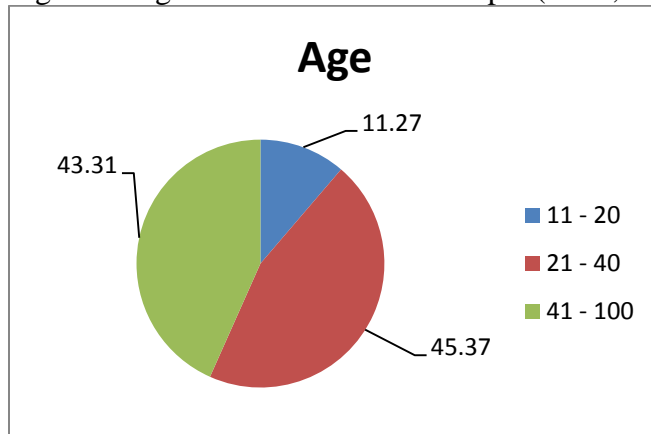
As in other jurisdictions where traffic stop analyses have been done, more male drivers are stopped by VSP than female drivers. Nearly two-thirds of all stops (64%) during the period involved male drivers.

Figure 1. Gender Breakdown of the Sample (n=49,371)



Again, as is the case in other jurisdictions, the vast majority of stops (89%) were of drivers who were over 20 years of age. The proportion of stops of older drivers was about equal between drivers under 40 years old and drivers over 40 years old.

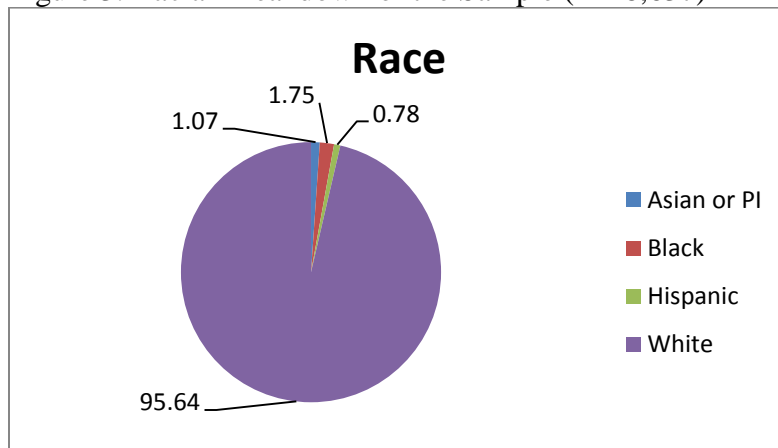
Figure 2. Age Breakdown of the Sample (n=18,097)



### Race and Ethnicity

As one would expect based on the demographics of the State of Vermont, the vast majority of the drivers stopped were white. Fully 95.6% of all drivers stopped were white during the year in which we had data. The other drivers stopped were: African-American 1.75% of all stops (859 drivers), Asian 1.07 of all stops (522 drivers) and Hispanic 0.78% (380 drivers). According to the US Census 5.7% of the Vermont population is non-white including African-Americans 1.0%, Asian 1.3% and Hispanic 1.5%.

Figure 3. Racial Breakdown of the Sample (n=48,637)

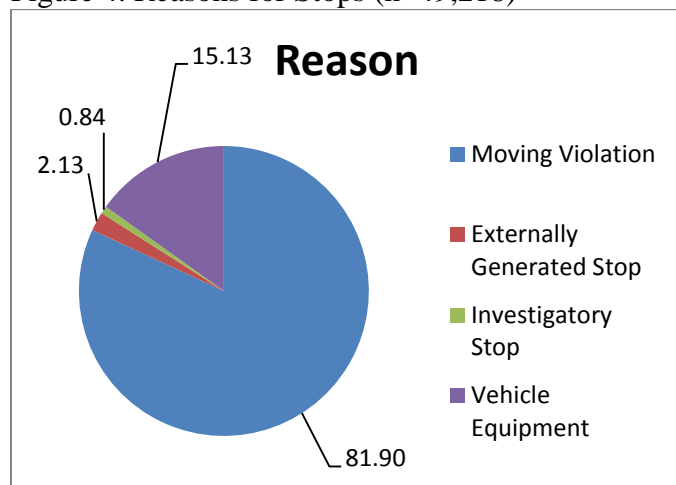


### Why are Individuals Stopped?

The vast majority of motorists stopped by the VSP are stopped for moving violations. Fully 82% of all stops are for moving violations; most often for speeding. The next most common reason for a traffic stop was equipment violations accounting for an additional 15% of all stops. Equipment violations generally included stops for headlights being out, exhaust systems that are not working, or some other violation that makes the vehicle less safe to drive. Together, moving violations and equipment violations accounted for 97% of all the traffic stops conducted by the VSP between July 2010 and June 2011. The other categories of stops included externally

generated stops, generally when a community member calls to report a traffic violation, and investigatory stops.

Figure 4. Reasons for Stops (n=49,218)



## OUTCOMES

### Searches

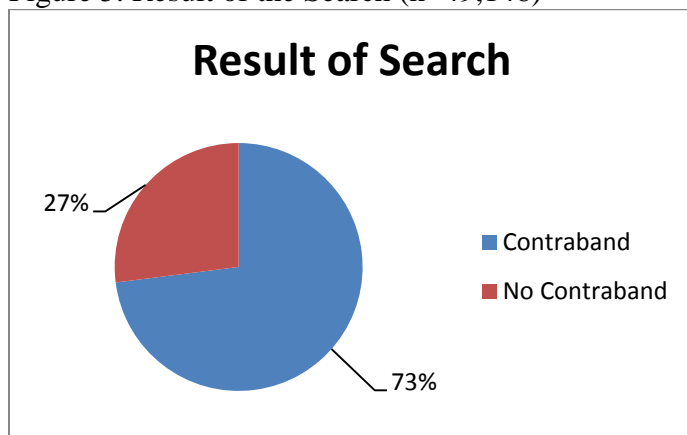
In the national literature on biased policing and racial profiling, the one consistent finding is that African American and Hispanic drivers are searched more frequently than White drivers. Additionally, searches take place in about 5%-15% of all traffic stops and few searches result in any contraband being found. In a pattern that is similar to that found in a prior analysis of traffic enforcement practices in four Chittenden County law enforcement agencies, the VSP perform searches in many fewer traffic stops than many of their national colleagues. In these data, VSP troopers conducted searches in approximately 1% of all stops that they conducted. Since across the country few searches result in contraband being found, and consequently contribute to community distrust of the police, the fact that VSP conduct fewer searches than their peers can be viewed as a positive development.

### Evidence or “Hit Rates”

As indicated above, one of the most potentially negative elements of the debate around traffic enforcement and allegations of biased policing or racial profiling is the conduct of searches where nothing is found. The measurement of what proportion of searches has resulted in contraband being found has been labeled as the “Hit Rate.” In prior research, the hit rates have been found to range from 5%-30%, indicating that the vast majority of searches result in nothing being found and often a community member who is annoyed at being subject to such an intrusive law enforcement tactic. In VSP, the rate of searches resulting in a “hit” is very high. Of the 547 searches that were conducted by VSP over the study period, 73% of these searches resulted in contraband being found. This means that over the year of traffic enforcement involving nearly 50,000 stops only 147 motorists were searched with no contraband being found. This dataset

indicates that VSP are being unusually prudent in their decision to search a driver or vehicle and that in the vast majority of searches the trooper was correct and they do find contraband.

Figure 5. Result of the Search (n=49,146)



### Warnings vs. Citations

One additional area of post-stop discretionary decision making involves the decision to issue a warning or a citation to a driver who has been stopped. Across the country, there is wide variation in the proportion of drivers who are given a warning vs. the proportion who are given a citation. This variation is effected by administrative policies as well as supervisory preferences. In Vermont, the State Police give warnings to most of the drivers they stop. In fully 56% of all stops during the period under study, the VSP troopers gave the driver a warning. This can be compared to 42% of the drivers who received a citation. In Illinois, for example, more than 60% of drivers stopped in that state received a citation.

Figure 6. Result of the Stop (n=49,193)

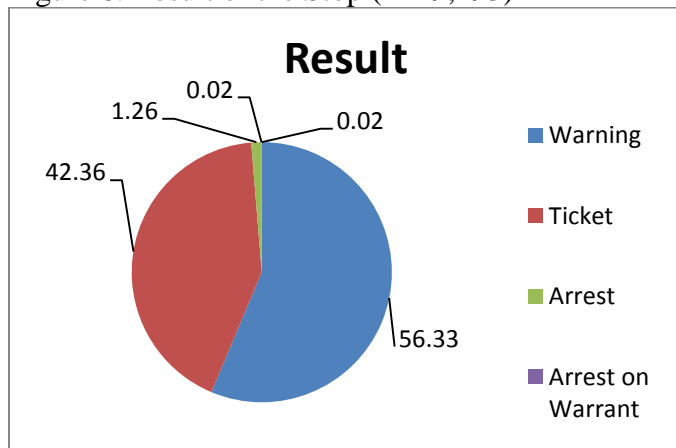


Table 1. Result by Type of Stop

	Moving Violation	%	Vehicle Equipment	%
Warning	21,303	53.1%	5,816	78.1%
Ticket	18,428	46.0%	1,510	20.3%
Arrest	348	0.9%	113	1.5%
Arrest on Warrant	8	0.0%	1	0.0%
No Action	5	0.0%	5	0.1%
n	40,094		7,445	

We then looked to see if the outcome of the stop differed by the type of stop. While VSP troopers issue warnings more often than tickets in both moving violation stops and equipment violation stops, they are more likely to issue a ticket in moving violation stops. Troopers issued tickets in 46% of moving violation stops but only issued a ticket in 20% of the equipment violation stops. This would seem to be associated with the severity of the violation, with moving violations often posing a greater risk to public safety than equipment violations.

### Trooper Assignments

In Vermont as in other states troopers are grouped by location and by function. In Vermont this assignment is referred to as the Agency Code and there are 13 Agency Codes in all. As you can see below twelve of the Agency Codes refer to geographic patrol areas. SPH1 indicates Troopers assigned to headquarters some of whom focus on traffic enforcement in the high volume areas of I 89 and I 91.

### AGENCY CODES

SPA1 WILLISTON (0400 Chittenden County, 0800 Lamoille County)  
 SPA2 ST ALBANS (0600 Franklin County, 0700 Grand Isle County)  
 SPA3 MIDDLESEX(0900 Orange County, 1200 Washington County)

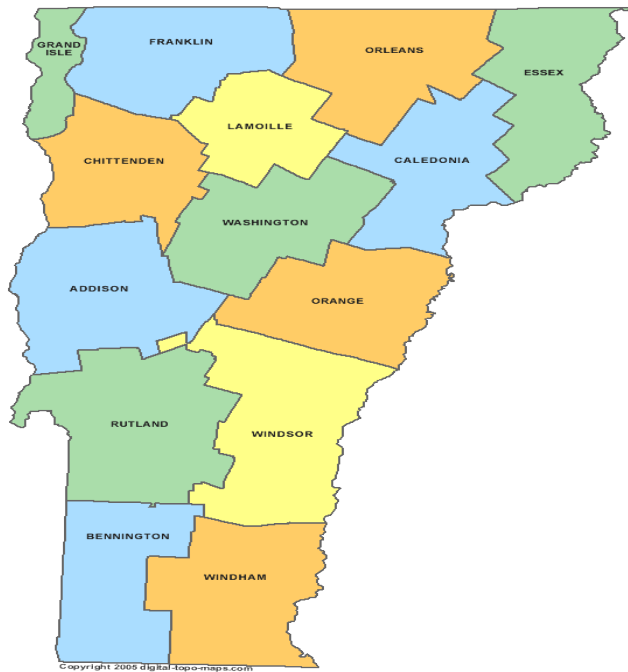
SPB1 ST JOHNSBURY(0300 Caledonia County, 0500 Essex County)  
 SPB2 DERBY (1000 Orleans County, 0500 Essex County)  
 SPB3 BRADFORD (0900 Orange County)

SPC1 RUTLAND (1100 Rutland County)  
 SPC2 NEW HAVEN (0100 Addison County)  
 SPC3 SHAFTSBURY(0200 Bennington County)

SPD1 ROCKINGHAM (1300 Windham County, 1400 Windsor County)  
 SPD2 BRATTLEBORO (1300 Windham County)  
 SPD3 ROYALTON (1400 Windsor County, 0900 Orange County)

## SPH1 Troopers assigned to State Police Headquarters (Tops Unit)

Figure 7 – Vermont County Map



### Activity by Assignment

When we review the activity of troopers assigned to these areas, we see that there is some differences in the enforcement activity across assignments. As would be expected, since they are primarily focused on traffic enforcement, troopers assigned to headquarters made the most stops accounting for 15.6% of all stops in the State. The unit with the next largest traffic stop activity would be SPA2 covering Franklin County and Grand Isle County with 10% of all stops being conducted by those troopers. The area with the smallest proportion of stops over the period was SPB2 covering Orleans County and Essex County with 2.7% of all statewide stops. It is interesting that we see such variation in the four northernmost counties in the state with two being high enforcement counties and two being relatively low enforcement counties. The proportion of stops in all other counties is relatively similar running between 5.3% and 8.7% of all stops.



Table 2: Agency Descriptive Statistics

Agency	Frequency	%
SPA1	3,773	7.6
SPA2	4,977	10.03
SPA3	3,718	7.49
SPB1	3,280	6.61
SPB2	1,378	2.78
SPB3	3,081	6.21
SPC1	4,341	8.75
SPC2	4,016	8.09
SPC3	2,723	5.49
SPD1	2,638	5.32
SPD2	3,827	7.71
SPD3	4,122	8.31
SPH1	7,753	15.62
Total	49,627	100

### Reason for Stops by Assignment

Next, we reviewed the reason for the stop by county and again found some interesting differences. Troopers from SPA2 (Franklin and Grand Isle County) do the smallest proportion of stops for moving violations (58%) and the most equipment violation stops (35.2%) while the neighboring counties in SPB2 (Orleans and Essex County) do the largest proportion of moving violation stops (98%). Again, since these represent the four northernmost counties in Vermont, it is interesting why their traffic enforcement practices differ so dramatically. In other areas of the state, Chittenden and Rutland County have the most externally generated stops, more than twice the statewide average.

### Searches by Assignment

As we observed in the statewide analysis, the pattern of conducting relatively few searches continues in all the Vermont counties. While much caution needs to be exercised because of the small numbers of searches conducted in each area, some broad patterns can be discerned. The greatest proportion of searches were conducted in SPC2 (Addison County) and SPB1 (Caledonia and Essex County). But even here the troopers assigned to SPB1 only searched 2.5% of the vehicles they stopped – far below the national average. Again, similar to the statewide figures, when troopers do conduct a search in Vermont they are much more likely to find contraband. In every county except SPA3 (Orange County and Washington County), the majority of all searches conducted uncovered contraband. In SPB2 (Orleans and Essex County), every search conducted uncovered contraband.

## Citations and Warnings by Assignment

As with the statewide analysis above, in 11 of the 13 assignment areas, troopers were more likely to give out warnings than citations (see Table 3 below). The two areas where troopers gave out more citations than warnings were those troopers assigned to headquarters SPH1 and SPB3 Orange County. Figure 8 shows standardized scores which represent the difference between giving warnings and handing out citation. The assignments that deviate significantly from the group mean are in orange. SPD3 gave significantly more warnings than citations while SPH1 gave out significantly more citations than warnings.

Figure 8. Warning vs. Citation Disparities by Assignment

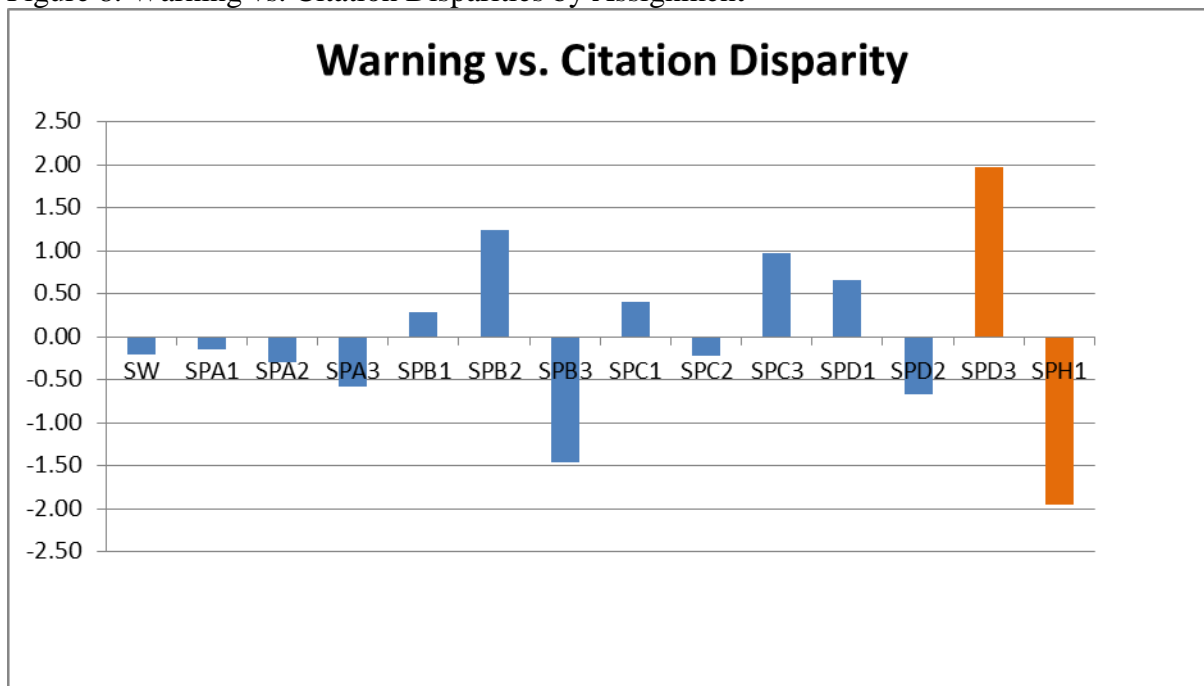


Table 3: Stop Characteristics by District

	Total	SPA1	SPA2	SPA3	SPB1	SPB2	SPB3	SPC1	SPC2	SPC3	SPD1	SPD2	SPD3	SPH1
Reason														
Moving Violation	81.54	68.69	57.65	75.83	83.93	98.18	88.52	74.66	78.40	78.55	86.38	90.64	93.70	92.75
Externally Generated Stop	2.13	4.62	3.29	4.91	2.84	0.44	1.50	4.40	1.40	1.47	2.09	0.74	0.54	0.04
Investigatory Stop	0.84	0.73	2.03	1.26	1.96	0.00	0.55	1.50	0.42	0.18	0.42	0.45	1.00	0.05
Vehicle Equipment	15.13	25.80	35.22	17.64	9.75	1.24	9.33	19.32	19.75	19.79	11.04	8.02	4.70	7.16
Action														
No Search	99.01	99.02	99.11	99.62	98.69	99.78	98.66	99.41	97.55	99.63	98.14	99.00	99.32	99.22
Search w/ Warrant	0.07	0.05	0.08	0.00	0.12	0.00	0.07	0.09	0.13	0.11	0.23	0.05	0.00	0.04
Search w/o Warrant	0.56	0.57	0.53	0.22	0.95	0.15	0.98	0.40	1.00	0.11	1.03	0.63	0.39	0.42
Search - Reasonable Suspicion	0.36	0.35	0.35	0.26	0.24	0.07	0.29	0.09	1.33	0.15	0.61	0.32	0.29	0.04
Result														
Warning	56.33	57.00	55.00	53.09	60.25	70.33	44.59	61.76	55.54	67.76	64.10	52.36	76.92	40.55
Ticket	42.36	41.83	42.79	45.87	37.09	29.53	53.82	36.57	41.94	31.98	34.27	46.84	22.81	58.78
Arrest	1.26	1.11	2.21	0.96	2.66	0.15	1.53	1.66	2.45	0.15	1.52	0.66	0.24	0.66
Arrest on Warrant	0.02	0.03	0.00	0.00	0.00	0.00	0.07	0.00	0.08	0.00	0.11	0.05	0.00	0.00
No Action	0.02	0.03	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.05	0.00	0.01
Evidence														
No Search	98.89	98.72	99.02	99.31	98.53	99.71	98.56	99.20	97.52	99.78	97.98	98.70	99.29	99.21
Contraband Found	0.81	0.76	0.90	0.25	1.20	0.29	1.24	0.52	1.90	0.11	1.52	1.03	0.49	0.49
No Contraband	0.30	0.52	0.08	0.44	0.28	0.00	0.20	0.28	0.58	0.11	0.49	0.26	0.22	0.30

Table 3 breaks down the characteristics of stops by district. The first column presents the characteristics of stops statewide (total sample) while the remaining columns present the data by district.

### **Traffic Stops by Race or Ethnicity**

Due to the small number of people of color stopped during the period of analysis, 1761 drivers or 4.4% of all stops conducted by VSP troopers, we have collapsed African-American, Asian and Hispanic drivers into a non-white category for this analysis. The command staff of the VSP wanted to determine if racial or ethnic disparities existed in any of the data on traffic enforcement patterns by their troopers. It is important to note that racial or ethnic disparities may not be an indication of biased policing or racial profiling. Disparities can be caused by a wide variety of other factors such as deployment or special investigations and as such are simply an indicator that should alert an agency to look into the issue further. Table 4 presents an analysis by the race of the driver and the characteristics of the stop.

### **Reason for Stops by Race or Ethnicity**

During the period of the study, non-white drivers were more likely to be stopped for moving violations and white drivers were more likely to be stopped for equipment violations. While these differences are not statistically significant, they run counter to some prior research on racial profiling. It has been alleged in prior research that since equipment stops tend to be more discretionary on the part of an officer, if non-white drivers were stopped more frequently for equipment violations it might be an indication that officers were looking for a reason or pretext to stop a particular driver. In Vermont, the opposite appears to be true where white drivers are more likely to be stopped for equipment violations.

### **Search by Race or Ethnicity**

Non-white drivers are slightly more likely to be searched by Vermont State troopers in those stops where a search is conducted. While this difference is not statistically significant, it may bear further review. A racial or ethnic disparity in searches is one of the most consistent findings in the racial profiling literature and seeing an indication of a similar pattern in these data could be an indication of some bias in the decision to conduct a search. The fact that differences exist in the more discretionary categories, searches without a warrant and searches based on reasonable suspicion, may also be indicative of racial and ethnic disparities. It is interesting to note that the searches based on a warrant, searches involving very little discretion for the trooper, are almost identical for whites and non-whites. When we look at whether the search uncovered contraband by race or ethnicity, we find that searches of whites uncovered contraband more often by a ratio of nearly 4-to-1. Searches of non-whites on the other hand uncovered contraband much less often; in fact, there were nearly two searches of non-whites that failed to uncover contraband for every search that did find contraband. While the small number of searches means that any results should be viewed with caution, it does appear that some VSP troopers are more likely to search non-white drivers who do not have contraband on them or in their vehicle, than white drivers.

## Result of Stops by Race or Ethnicity

Table 4 shows the result of the stop by race or ethnicity. This area contains the largest racial or ethnic disparities in the analysis. Overall, whites receive a ticket in 41.83% of all stops while non-whites receive a ticket 51.99% of the time. This is examined further in Table 5 by performing chi-square tests first on the overall sample and then individually by district. This analysis will identify if there are differences by race in what would be expected given the data.

Table 4: Stop Characteristics by Race

		White	Non-White
Reason	Moving Violation	81.32	86.90
	Externally Generated Stop	2.12	2.29
	Investigatory Stop	0.84	1.17
	Vehicle Equipment	15.35	9.09
Action	No Search	99.06	97.49
	Search w/ Warrant	0.07	0.06
	Search w/o Warrant	0.54	1.01
	Search - Reasonable Suspicion	0.32	1.45
Result	Warning	56.85	46.39
	Ticket	41.83	51.99
	Arrest	1.27	1.57
	Arrest on Warrant	0.02	0.06
	No Action	0.02	0.00
Evidence	No Search	98.95	97.37
	Contraband Found	0.81	0.95
	No Contraband	0.24	1.68

When compared to whites, non-whites are ticketed more than would be expected. Table 5 indicates that, statewide, the number of stops resulting in a ticket happens more than would be expected when the individual is non-white. When breaking this analysis down by assignment, several individual assignments follow this pattern including: SPA1, SPA3, SPB3, SPC2, SPD2, SPD3, and SPH1. Again due to the small number of stops of non-white drivers these findings bear watching over the future.

Table 5: Tickets Issued by Race

	No Ticket	Ticket
White	27044	19441
Non-White	860	930
Chi <sup>2</sup>	72.56***	

Most traffic stops are the result of moving violations (81.5%). Being stopped for a moving violation increases the chances (odds) of receiving a ticket by 44%. Even after considering this result, non-whites have over double the odds (2.3 times as likely) of receiving a ticket than whites. This suggests that it is not because of moving violations that non-whites are more likely to receive a ticket than whites. Additional data, such as driver history, is needed to discern why this disparity may exist.

Table 6. Searches by Age

	11-20	21-40	41-100
Searched	2.42%	1.60%	.51%
Not Searched	97.58%	98.40%	99.49%
Chi2	66.53***		

Table 6 indicates that younger individuals are searched more often than older individuals. Both the 11-20 age group and the 21-40 age group are more likely than the older group to be searched by VSP officers. Older individuals in the 41-100 age group are the least likely group to be searched.

Table 7. Contraband found by Age

	11-20	%	21-40	%	41-100	%
No Contraband	6	12.2%	36	27.5%	17	42.5%
Contraband	43	87.8%	95	72.5%	23	57.5%
Total	49		131		40	

When considering age, finding contraband decreases as age increases. A very high percentage of searches result in contraband in the 11-20 age group (87.8%). This drops to 72.5% in the 21-40 age group. Again, there is a large drop in finding contraband to 57.5% in the 41-100 age group. This is not surprising as younger individuals are more likely to be carrying drugs and other contraband than older individuals. Taking these results with those above in Table 6, it appears that police are making searches among the age groups that have the greatest likelihood of yielding contraband

## Summary

Overall the traffic enforcement practices of the VSP seem professional and appear to have relatively few disparities by race or ethnicity. The VSP stops very few drivers of color (4.4%) when compared to a state population which is 5.7% nonwhite.

VSP troopers conduct relatively few searches, conducting searches in only 1% of all traffic stops. These searches are very productive with troopers finding contraband in 73% of all the searches.

The only significant difference by race or ethnicity we find in the analysis is that during the period of this study, non-white drivers were more likely to receive a ticket when compared to white drivers. This could be due to factors other than race and should not be read as an indication of biased policing by the Vermont State Police. This kind of finding could be the result of other factors such as racial and ethnic differences in severity of the offense that initiated the stop, or the driving history of the driver. These are variables we did not have in this analysis, but could be reviewed by VSP if they saw this finding as a potential problem.

As mentioned above, searches are rare events. However, it does appear that non-white drivers are more likely to be searched than white drivers. During the period of the study, non-white drivers were two and one half times more likely to be searched compare to white drivers. Additionally, fewer of the non-white searches found contraband on the driver. Due to the small numbers of non-whites being searched overall this pattern is not statistically significant but may bear further review as more data become available.

## Appendix A: Summary Statistics

	Frequency	%
Gender		
Male	31699	64.20
Female	17680	35.80
Race		
Asian or PI	522	1.07
Black	859	1.75
Hispanic	380	0.78
White	46836	95.64
Age		
11 - 20	2041	11.27
21 - 40	8214	45.37
41 - 100	7842	43.31
Reason		
Moving Violation	40309	81.90
Externally Generated Stop	1048	2.13
Investigatory Stop	413	0.84
Vehicle Equipment	7448	15.13
Action		
No Search	48725	99.01
Search w/ Warrant	35	0.07
Search w/o Warrant	277	0.56
Search - Reasonable Suspicion	176	0.36
Result		
Warning	27717	56.33
Ticket	20841	42.36
Arrest	620	1.26
Arrest on Warrant	11	0.02
No Action	10	0.02
Evidence		
No Search	48607	98.89
Contraband Found	400	0.81
No Contraband	147	0.30